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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER

CHAWLA, JYOTI

ART UNIT

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1794

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 09/525,892	Applicant(s) NAVARRO ET AL.	
	Examiner JYOTI CHAWLA	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 08 April 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 4, 17, 19 and 21-24 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 4, 17, 19 and 21-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicant's submission filed on April 8, 2008 has been entered. Claims 4 and 17 have been amended and claim 16 has been cancelled. Claims 4, 17, 19 and 21-24 are pending and examined in the application.

Claim Rejections - 35 USC § 112

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Rejection of claims 4 and 17 steps (b) for the recitation of "yeast required for sterol and unsaturated fatty acid synthesis", has been withdrawn based on applicant's amendment dated 4/8/2008.

Claims 17, 19, 21-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 17 is also indefinite for the recitation of step (e) that states "monitoring the wort for end of fermentation", as it is unclear as to what is encompassed by the phrase "end of fermentation", whether it includes removal of yeast or death of all yeast or some other way of ending the fermentation. Further it is unclear as to how the "end of fermentation" is monitored. Clarification and/or correction is required.

Applicant's argument regarding the "end of fermentation" (Remarks, page 5) has been considered, however, applicant is claiming a method for fermenting wort, and the details of changes in specific gravity, as discussed on page 5 of remarks has not been included in the claims as recited. In response to applicant's argument that certain features of applicant's invention are well known in the art, it is noted that the features upon which applicant relies (i.e., reduction in specific gravity, increase in ethanol content) are not recited in the rejected claim(s). Although the claims are interpreted in

light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 4, 17, 19 and 21-24 are rejected under 35 U.S.C. 103(a) as being unpatentable over Quain (GB 2197341 A) in view of Handbook of Brewing further in view of applicant's own admission (Pages 1-4).

Regarding claims 4 and 17 steps (a), (b), (d) and (e), Quain teaches a method for brewing beer which includes a method of enhancing yeast fermentation of wort by suspending yeast in a wort-free aqueous solution (water or other aqueous liquid, comprising liquid adjunct (Page 1, lines 26-31 and 41-44; Page 2, line 18 to page 3, line 40); and aerating the suspension for a period of time with a gas comprising oxygen to allow oxygen uptake by the yeast required for sterol and unsaturated fatty acid synthesis (Page 1, lines 13-15 and lines 41-42).

Regarding the newly added limitation Quain teaches that the oxygen can either be supplied alone or in combination of gases. Quain also teaches that the oxygen content of aqueous suspension of yeast is increased in such a manner as to maintain the

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concentration of oxygen substantially constant in the suspension and is continued at least until such time as there is no longer any need to increase the rate of introduction of oxygen to maintain the same concentration of oxygen in the suspension (Page 1, lines 43-65), i.e., the oxygen introduction rate to the yeast solution is progressively increased above the uptake rate of yeast until at least the time when the yeast reaches its maximum oxygen uptake rate and the delivery or supply of oxygen is maintained after that. Regarding the delivery of oxygen, Quain teaches that either oxygen can be supplied alone or in combination of gases. Based on the teaching of Quain, it would have been obvious to one of ordinary skill in the art at the time the invention was made that when oxygen is supplied as a combination of gases, the rate of delivery of the gas combination containing oxygen would have to be at least above the maximum oxygen uptake rate of the yeast in order to supply oxygen at the maximum uptake rate to the yeast, which is taught by Quain (Page 1), and is also what is instantly claimed in claims 4 and 17, steps (b).

Quain also teaches transferring the yeast when it reaches maximum oxygenation (Page 2, lines 1-10 and Page 3, lines 40-60) and then fermenting under suitable fermentation conditions to produce beer (Page 3, lines 60-65).

Quain is silent regarding the gravity for aeration however, Quain teaches the specific gravity of the ale wort for pitching of 1.060 (i.e., about 14degrees Plato wherein degree Plato = $[259 - \{259/\text{specific gravity points}\}]$) to which the aerated yeast is pitched (Page 2, lines 38-40), which falls within the applicant's recited range. Further, Handbook of Brewing teaches that in order to reduce the lag time and have a rapid start to the fermentation yeast is pitched at a rate between 5-20 million cells/ml (Page 195, Para 3), i.e., 5-20 degrees Plato, which falls in the recited range of the applicant. Thus specific gravity in the range of 5-20 degrees Plato (i.e., in the instantly claimed range) was known to be optimal for the pitching yeast at the time of the invention. Therefore, it would have been obvious to one with ordinary skill in the art at the time of invention to modify Quain and aerate the yeast in a solution that has the specific gravity value

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comparable to the one used for pitching as taught for pitching by Quain and also by the Handbook of Brewing in order to regulate the fermentation process by letting the yeast have an environment with consistent specific gravity from the aerating medium to the fermentation medium, thus increasing the chance of the yeast to grow and ferment at an optimal level upon transfer to the wort. One would have been further motivated to do so in order to make the fermented product more consistently in lesser amount of time.

Quain teaches aqueous solution containing yeast to be aerated (Page 2, lines 18-20 and 55-56), however, the reference does not specify the contents of the aqueous solution. It is noted however that yeast are not photosynthetic organisms and depend upon organic carbon compounds for energy to survive. An "adjunct" is broadly defined as something that is added, therefore, aqueous solution as taught by Quain would constitute as liquid adjunct. Regarding the aqueous solution as taught by Quain containing nutrients or cereal sugars to keep the yeast alive and take up oxygen as recited in claims 4 and 17. Handbook of brewing teaches that among the nutritional requirements of brewer's yeast, the carbohydrate requirement involves use of sugars like sucrose, glucose (dextrose) and fructose (fruit sugar), maltose and maltotriose. It is known that maltose and maltotriose are examples of sugars that pass intact across the cell membrane of yeast, and are thus easily absorbed. It is also known that maltose and maltotriose (malted sugars) are the major sugars in the brewer's wort. According to the Handbook of brewing, ability of brewer's yeast to absorb and metabolize maltose and maltotriose is essential to the determination brewer's yeast's quality (Page 182, Part C, also see pages 183 and 184). Thus based on the teaching of Handbook of Brewing, it is noted that the assessment of brewer's yeast's ability to metabolize sugars, such as glucose, maltose and maltotriose, would have been a matter of routine determination for one of ordinary skill in the art at the time of the invention. It would have been important for one of ordinary skill in the art to determine the ability of brewer's yeast to metabolize sugars, such as maltose, maltotriose etc., because the quality of yeast determines the optimal amount of brewer's yeast required for fermentation of a particular amount of wort in order to make a consistent fermented product in a consistent manner. Therefore,

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one of ordinary skill in the art at the time of the invention would have been motivated to modify Quain in view of Handbook of Brewing and specifically state the addition of nutrients including cereal sugars, such as glucose (dextrose), maltose and maltotriose to the oxygenating aqueous solution, in order to provide the oxygenating yeast with a carbon source for energy and maintain yeast viability. One of ordinary skill would have been further motivated to do so in order to get a feedback about the quality or genetic makeup of the yeast while also oxygenating the yeast at the same time. Further, it is noted that the addition of sugars to the aqueous suspension as taught by Quain would also help in modifying the specific gravity of the aerating medium as discussed above

Regarding the addition of zinc to the yeast suspension or the adjunct liquid as recited in step (c) of claims 4 and 17, applicants admit that the prior art has added zinc to yeast fermentations to enhance fermentation rate (Top of page 3 of the specification). Further, the Handbook of Brewing teaches that addition of zinc to water that is used in brewing processes was known. Proprietary blended yeast foods containing zinc are used in brewing as aids to reduce problems and have a more consistent fermentation (Pages 216-217). Zinc plays an important role in the protein synthesis and yeast growth and also reduces toxicity of cadmium (Page 143). Therefore, it would have been obvious to one with ordinary skill in the art at the time of the invention to further modify Quain and add zinc as part of the nutrient component in the aqueous suspension for the aeration of yeast in order to enhance the fermentation ability of the yeast when it is later pitched into the fermentation medium. One of ordinary skill would have been motivated to add zinc along with other nutrients into the aeration medium in order to let the yeast obtain the beneficial effects of zinc, such as, protein synthesis and yeast growth and reduced toxicity of cadmium, and obtain a yeast with an enhanced fermentation ability upon pitching. One would have been further motivated to do so in order to have faster and more consistent rate of fermentation thereby reducing the time of the overall beer making process, which is also the intent of the applicant.

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Regarding the addition of yeast to a suitable volume of non-aerated wort as recited in steps (d) of claims 4 and 17, the wort taught by Quain is oxygen-free wort, i.e., non-aerated wort (Page 1, lines 32-35), as instantly claimed.

Claim 17 recites a method for fermenting wort wherein steps (a)-(e) have the same limitations as recited in steps (a)-(e) of claim 4, thus claim 17 steps (a)-(e) are rejected for the same reasons as steps (a)-(e) of claim 4.

Regarding claim 17 (f), Quain teaches monitoring the wort for an end of fermentation, wherein the end of fermentation is reached in a shorter time as compared to a fermentation method wherein aerated wort is pitched with non-aerated yeast slurry (Page 1, lines 21-31). Also see the rejection under 35 USC 112(second paragraph).

Regarding claim 19, Quain teaches using brewer's yeast (Page 1, line 50), as instantly claimed.

Regarding claims 21 and 22, Quain teaches suspending yeast in an aqueous medium to oxygenate however is silent regarding the use of maltose, maltotriose and glucose (dextrose) in the adjunct. Quain is silent regarding the addition of cereal sugars to the yeast suspension as recited in claims 21 and 22. It is noted, however, that yeast are not photosynthetic organisms and depend upon organic carbon compounds for energy to survive. Further, as discussed in the rejection above, Handbook of Brewing teaches that among the nutritional requirements of brewer's yeast, the carbohydrate requirement involves use of sugars like sucrose, glucose (dextrose) and fructose (fruit sugar), maltose and maltotriose. It is known that maltose and maltotriose are examples of sugars that pass intact across the cell membrane of yeast, and are thus easily absorbed. It is also known that maltose and maltotriose (malted sugars) are the major sugars in the brewer's wort. According to the Handbook of brewing, ability of brewer's yeast to absorb and metabolize maltose and maltotriose is essential to the determination brewer's yeast's quality (Page 182, Part C, also see pages 183 and 184). Thus based on the teaching of Handbook of Brewing, it is noted that the assessment of

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brewer's yeast's ability to metabolize sugars, such as glucose, maltose and maltotriose, would have been a matter of routine determination for one of ordinary skill in the art at the time of the invention. It would have been important for one of ordinary skill in the art to determine the ability of brewer's yeast to metabolize sugars, such as maltose, maltotriose etc., because the quality of yeast determines the optimal amount of brewer's yeast required for fermentation of a particular amount of wort in order to make a consistent fermented product in a consistent manner. Therefore, one of ordinary skill in the art at the time of the invention would have been motivated to modify Quain in view of Handbook of Brewing and specifically state the addition of nutrients including cereal sugars, such as glucose (dextrose), maltose and maltotriose to the oxygenating aqueous solution, in order to provide the oxygenating yeast with a carbon source for energy and maintain yeast viability. One of ordinary skill would have been further motivated to do so in order to get a feedback about the quality or genetic makeup of the yeast while also oxygenating the yeast at the same time. Further, it is noted that the addition of sugars to the aqueous suspension as taught by Quain would also help in modifying the specific gravity of the aerating medium as discussed above.

The limitations recited in claims 23 and 24 are the same as the limitations of claims 21 and 22, thus claims 23 and 24 are rejected for the same reasons as claims 21 and 22 above.

Response to Arguments

Applicant's arguments, filed April 8, 2008 have been fully considered, however have not been found persuasive.

Applicant's remarks regarding the 35 USC 112 rejections have been considered and responded in the office action above.

I) Regarding applicant's arguments about Quain not teaching "gas is delivered above a maximum oxygen uptake rate of the yeast" (Remarks, page 6), has been considered and responded in the rejection above.

II) Regarding applicant's arguments about Quain and Handbook of Brewing not teaching "specific gravity" (Remarks, page 6), have been considered and responded in the rejection above. Regarding applicant's allegation that there is no motivation to combine Quain and Handbook of Brewing, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Quain teaches of aerating yeast prior to pitching and provides specific gravity data for the ale wort to which the aerated yeast is pitched. Handbook of Brewing teaches that yeast is typically pitched at a specific gravity range which falls within applicant's recited range. The wort as taught by Quain also has the specific gravity in applicant's recited range. Therefore, it would have been obvious to modify Quain and adjust the specific gravity of the aqueous suspension of yeast based on teachings from Handbook of Brewing to within 5-20 Degrees Plato, in order to facilitate a rapid start to the fermentation when the yeast is pitched at a rate where the specific gravity falls in the same range as the specific gravity of Quain's wort, both of which fall in the recited range of the applicant. One would have been motivated to do so in order to regulate the fermentation process by letting the yeast have an environment with consistent specific gravity from the aerating medium to the fermentation medium, thus increasing the chance of the yeast to grow and ferment at an optimal level upon transfer to the wort. One would have been further motivated to do so in order to make the fermented product more consistently in lesser amount of time.

III) Applicant's argument that Quain does not show the addition of maltose and maltotriose and there is no motivation to combine the references (Remarks, page 7) used in the obviousness rejection the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the

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claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In the instant case, applicant's remarks are not persuasive because it is well known in the art of brewing that yeast needs a carbon source for energy and survival as it is non-photosynthetic and sugars serve as the main carbon source. Quain is silent regarding the addition of cereal sugars to the yeast suspension as recited in claims 4 and 17. However Handbook of brewing teaches that among the nutritional requirements of brewer's yeast, the carbohydrate requirement involves use of sugars like sucrose, glucose (dextrose) and fructose (fruit sugar), maltose and maltotriose. Further it was known at the time of the invention that maltose and maltotriose are examples of sugars that pass intact across the cell membrane of yeast, and are thus easily absorbed. It is also known that maltose and maltotriose (malted sugars) are the major sugars in the brewer's wort and the ability of brewer's yeast to absorb and metabolize maltose and maltotriose is essential to the determination brewer's yeast's quality (Page 182, Part C, also see pages 183 and 184 Handbook of brewing). Thus based on the teaching of Handbook of Brewing, it is noted that the assessment of brewer's yeast's ability to metabolize sugars, such as glucose, maltose and maltotriose, would have been a matter of routine determination for one of ordinary skill in the art at the time of the invention. It would have been important for one of ordinary skill in the art to determine the ability of brewer's yeast to metabolize sugars, such as maltose, maltotriose etc., because the quality of yeast determines the optimal amount of brewer's yeast required for fermentation of a particular amount of wort in order to make a consistent fermented product in a consistent manner. Therefore, one of ordinary skill in the art at the time of the invention would have been motivated to modify Quain in view of Handbook of Brewing and specifically state the addition of nutrients including cereal sugars, such as glucose (dextrose), maltose and maltotriose to the oxygenating aqueous solution, in order to provide the oxygenating yeast with a carbon source for energy and maintain yeast viability. One of ordinary skill would have been further motivated to do so in order

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to get a feedback about the quality or genetic makeup of the yeast while also oxygenating the yeast at the same time. Further, it is noted that the addition of sugars to the aqueous suspension as taught by Quain would also help in modifying the specific gravity of the aerating medium as discussed above.

In response to applicant's arguments against the references individually (Remarks pages 6-7), one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Thus applicant's arguments have been fully considered and have not been found persuasive and claims 4,17, 19, 21-24 are rejected for reasons of record.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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Any inquiry concerning this communication or earlier communications from the examiner should be directed to JYOTI CHAWLA whose telephone number is (571)272-8212. The examiner can normally be reached on 9:00 am to 5:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Keith Hendricks can be reached on (571) 272-1401. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Jyoti Chawla
Examiner
Art Unit 1794

/KEITH D. HENDRICKS/

Supervisory Patent Examiner, Art Unit 1794